



Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	<u>GPR 5330.1I</u>	APPROVED BY Signature:	<u>Original Signed By</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>	NAME:	<u>Felicia Jones-Selden</u>
EXPIRATION DATE:	<u>December 15, 2020</u>	TITLE:	<u>Director Of Applied Engineering and Technology Directorate</u>

COMPLIANCE IS MANDATORY

Responsible Office: 500/Applied Engineering and Technology Directorate

Title: Work Order Authorization (WOA) Process

PREFACE

P.1 PURPOSE

The purpose of this Goddard Procedural Requirements (GPR) document is to ensure the fabrication, assembly, inspection, and testing of Goddard Space Flight Center (GSFC) in-house hardware are performed in an approved and documented manner.

P.2 APPLICABILITY

This GPR applies to all in-house hardware products fabricated, assembled, inspected, and tested managed by Codes 400, Flight Projects Directorate or Code 800 Suborbital and Special Orbital Projects Directorate (Wallops Flight Facility) in which adequate documentation of the build, inspection and test is required.

For sub-orbital projects and Class D missions, the Project Manager (PM) may decide there is benefit in using this process or another type of documentation process. In these cases the documentation requirements may be less rigorous, which might not require using the WOA template.

This process may also be applied to software products at the discretion of the program or project. The use of WOAs or an equivalent process for software products is described in the applicable software planning documents.

This document does not apply to:

- Institutional work covered by a workmanship standard or laboratory procedure or other approved documentation. Examples include electrostatic discharge (ESD) bench checks and routine engineering activities such as moving non-critical equipment.
- Incoming inspection and testing of customer-supplied products as described in GPR 4520.3, Control of Customer-Supplied Product.
- Incoming inspection and test as described in GPR 4520.2, Receiving Inspection and Test.
- The electronic system used by the Advance Manufacturing Branch, Code 547 as described in 547-PG-8072.1.1, Manufacturing Process.

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

DIRECTIVE NO.	<u>GPR 5330.1I</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>
EXPIRATION DATE:	<u>December 15, 2020</u>

P.3 AUTHORITY

NPD 1280.1, NASA Integrated Management System Policy
 NPR 7120.5, NASA Space Flight Program and Project Management Requirements

P.4 APPLICABLE DOCUMENTS

- a. NPR 8715.3, NASA General Safety Program Requirements
- b. GPR 4520.2, Receiving Inspection and Test
- c. GPR 4520.3, Control of Customer-Supplied Product
- d. GPR 5340.4, Problem Reporting and Problem Failure Reporting
- e. 400-PG-5330.1.1, Work Order Authorization Controls for Code 400 Projects
- f. 547-PG-8072.1.1, Manufacturing Process
- g. WOA Template (See Appendix C)

P.5 CANCELLATION

GPR 5330.1G, Product Processing, Inspection, and Test
 GID 5330.1, Work Order Authorization (WOA) Process

P.6 SAFETY

None

P.7 TRAINING

Supervisors ensure personnel who write, review, approve or take direction from WOA are briefed or instructed in the requirements of this GPR. Project managers ensures all personnel who write, review, approve, or take direction from WOAs on their project are briefed or trained on their specific project WOA requirements (the Project WOA Procedure). When management finds that personnel do not understand the requirements of their project, the PM ensures those employees are re-instructed. If a formal training course is offered, it should be added to SATERN.

P.8 RECORDS

Record Title	Record Custodian	Retention
WOA or applicable documentation, including supporting documentation	Configuration Management Officer (CMO)	Retention depends on the historical significance of the product (See NPR 1441.1, NASA Record Retention Schedules [NRRS] 8/101 for description of historical significance): • NRRS 8/101: Permanent. Cut off records at close of program/project or in 3-year blocks for long term programs/projects. Transfer to National Archives 7 years after cutoff. -or- • NRRS 8/103: Engineering test and evaluation data. Temporary. Destroy between 5 and 30 years after program or project termination.

**NRRS 1441.1 – NASA Records Retention Schedules*

P.9 MEASUREMENT/VERIFICATION

Effectiveness of this document is verified through internal assessments and external audits.

DIRECTIVE NO.	<u>GPR 5330.1I</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>
EXPIRATION DATE:	<u>December 15, 2020</u>

PROCEDURES

In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

1.0 Responsibilities

1.1. WOA Process Responsibilities

1.1.1 Product Design Lead (PDL)

The PDL or designee:

- a. Shall be responsible for the development, approval, execution, and completion of the WOA.
- b. Determine the level of detail for the WOA based on the project plan and complexity of the work.
- c. Comply with the Project WOA Procedure.
- d. Track the completion of the WOA, providing status if requested from the CMO or project office.
- e. Ensure that Quality Engineering (QE) is notified of changes that affect requirements to the WOA prior to implementing the changes. Notification of other personnel is determined by the PDL.
- f. Review the completed, as-run WOA package (including associated procedures, photos, and drawings) prior to submitting the package to the QE and/or the Chief Safety and Mission Assurance Officer (CSO) for the final signoff.
- g. When using a logbook to record work, provide relevant details to document the build record.
- h. When provided the opportunity, provide review and comments to the Project WOA Procedure (400-PG-5330.1.1, WOA Controls for Code 400 Projects) for technical issues.

1.1.2 Systems Engineering

Systems engineering or higher level as designated by the Project should approve the WOA in the cases where work is allowed to start prior to having all attached documentation released. Section 2.3.k provides implementation details for ensuring products are not at risk.

1.1.3 Configuration Management Officer (CMO)

The CMO:

- a. Shall review the WOA packages for completeness (all required documents and drawings attached, etc.) prior to release. Prior to release, the CMO is authorized to make administrative corrections such as event numbering, grammar, or punctuation.
- b. Assigns a WOA number and release in accordance with the project procedures.
- c. Closes and retains completed WOAs.
- d. May co-author a Project WOA Procedure with the CSO.

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

DIRECTIVE NO.	<u>GPR 5330.1I</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>
EXPIRATION DATE:	<u>December 15, 2020</u>

1.1.4 Chief Safety and Mission Assurance Officer (CSO)

The CSO:

- a. Co-author the Project WOA Procedure as requested. (Note: The PM approves the WOA Procedure.)
- b. Periodically spot check in-process WOAs, notifying a Quality Engineer (QE) or PDL of any deficiencies and following up on corrections.
- c. Ensure WOA packages received are verified for completeness prior to submittal to CMO.
- d. Delegate CSO duties to QE, as needed.

1.1.5 Quality Engineering (QE)

The QE:

- a. Shall review and approve WOAs for completeness prior to submitting to CMO for release.
- b. Monitor aspects of WOA execution.
- c. Should routinely review WOAs and procedures for required signatures, dates, etc., to ensure that they are up-to-date, accurately reflect the work being performed, and comply with both this document and the Project WOA Procedure.
- d. Shall review and approve proposed changes to work.
- e. Perform CSO duties as requested by the CSO, such as spot-checking in-process WOA.
- f. Strive to record any additional processing events, details, or observations that complement the build record. Changes to the event shall be dated and initialed. Notes and observations do not require dates and initials.

1.1.6 Project Managers (PM)

PM (or designee) approve project related WOA procedures in accordance with 400-PG-5330.1.1, Work Order Authorization Controls for Code 400 Projects.

1.1.7 Engineers and Technicians

Engineers and technicians shall:

- a. Comply with WOA processing requirements as stated in this document and the Project WOA Procedure, which includes signing off on processing events. Events need to be signed off before leaving the work area.
- b. Perform work as required on the WOA.

Strive to record any additional processing events, details, or observations that complement the build record. Changes to the event shall be dated and initialed. Notes and observations do not require dates and initials.

DIRECTIVE NO.	<u>GPR 5330.1I</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>
EXPIRATION DATE:	<u>December 15, 2020</u>

2.0 WOA Process

Figure 1 shows the overall flow for this process. (See page 10)

2.1 When to Use a WOA

- 2.1.1 All fabrication, assembly, inspections, and testing work covered under NPR 7120.5, NASA Space Flight Program and Project Management Requirements (with the exception noted in section P.2 of this document) that are performed at GSFC shall be planned and executed through a WOA. This may apply to work performed at contractor facilities to the extent specified in their contract.
- 2.1.2 The point in the product development life cycle where WOAs are required to be documented per the Project WOA Procedure. Initiate the use of approved documentation no later than the beginning of space flight product manufacturing when the development effort comes under configuration control. The use of WOAs continues to the point of final product delivery, which may include launch-site processing, the launch event, or in-orbit checkout.
- 2.1.3 Engineering test units (ETU) and the work associated with ETU do not always require a WOA. If an ETU is used to qualify any aspect of the flight design, used to verify/validate any aspect of mission or ground systems, or has a good chance of actually being used for flight, it should be built using a WOA.
- 2.1.4 WOA template does not have to be used for sub-orbital or Class D missions when authorization for work performed is defined in the associated project plan and the work is documented in a logbook or equivalent. The method to authorize work on Class D missions and sub-orbital projects is usually less specific and less detailed than other class missions.

2.2 Guidance for Using the WOA Template

- 2.2.1 The WOA template (See Appendix C) is required to document any process included in the scope of this GPR. This template may be modified or tailored by the project as long as it contains all existing information/blocks.
- 2.2.2 When the WOA template is used with an approved procedure signed by all personnel that would be signing the WOA, only the PDL is required to sign the WOA. If the same personnel that signed the procedure are signing the WOA, they should not have to approve the WOA in addition.

2.3 WOA Package Assembly, Approval, and Release Process

- a. The PDL or designee submits the completed WOA and all required supporting documentation to the CMO.
- b. Each numbered event on the WOA should describe a discrete action to be performed with the exception of item d. (below) or reference a configuration-controlled document.
- c. Continuation sheets (additional sheets to WOA) are identified with the WOA number and page number(s).
- d. Where a series of events can be treated as a unit (e.g., the primary event cannot be completed without the preceding event having been completed—such as pressurizing a system, but the

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT

<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

DIRECTIVE NO.	<u>GPR 5330.1I</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>
EXPIRATION DATE:	<u>December 15, 2020</u>

system setup must be completed before the system can be pressurized), the sequence may be written as sub-bullets to a primary event within the body of the WOA. Sign off may be required only on the primary event. Sub-bulleted work should not run more than one page and should be completed in its entirety and signed before leaving the work area. To track the completion of sub-bullets, it is recommend that each event be checked off.

- e. The PDL has discretion to determine the detail of the WOA based on the classification of the mission, the phase of development, and the risk of the specific events. This can affect the frequency and placement of sign offs within the body of the WOA. The statements requiring QE/Safety witness of the work shall be coordinated with the QE/Safety or the CSO.
- f. Supplementary documentation or information should be included in the WOA for applicable considerations of activities, such as inspection, photography, testing, fabrication, product handling, integration and testing, personnel safety, environmental cleanliness requirements, or quality controls.
- g. Documentation of safety requirements for hazardous operations are described in NPR 8715.3, NASA General Safety Program Requirements
- h. Other factors that may affect the conformity of the product should be included in the WOA, including temperature, humidity, lighting, and protection from electrostatic discharge.
- i. Any special items of equipment needed for inspections or tests should be uniquely identified.
- j. Images, pictures, sketches, or uncontrolled extractions from drawings may be inserted in the WOA to clarify the work.
- k. The PDL and QE should minimize the number of signatures and reviewers required to release the WOA package. The project requirements procedure signature requirements may take precedence. In most cases, the number of required signatures and reviewers should not be greater than four.
- l. Events can be run out of sequence (except the WOA opening and closing events) at the discretion of the PDL or individual running the task. If the order is changed, the events are to be renumbered and initialed by the PDL or person performing the work. Special instructions should be added in the WOA at places where events must be run in sequence.
- m. Notes, observations, or any other information that supports the build record are encouraged. This type of information does not require any signatures or dates. Best practices indicate the information should be initialed and dated by the person entering the information.
- n. The WOA shall be submitted to the CMO in accordance with the Project WOA Procedure. (Note: When working on space flight hardware, all required documents need to be released prior to the WOA release unless approved by the systems engineer or specified person in the Project WOA Procedure. At the point in the document where the use of an unreleased document may affect the product, the systems engineer should place an event to ensure work is stopped until released documentation is obtained or cover with a problem report. Released drawings may not be required for work such as ground support equipment development, breadboards, or design units as long as the drawing is marked "preliminary." This preliminary drawing should be verified against the released drawing prior to completion of the WOA.)
- o. The WOA is given a unique number prior to release. The CMO stamps/approves (either electronically or physically), dates, and initial the cover page to show release and approval to start the work.

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT

<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

2.4 Work Performance and Documentation

- a. The WOA package (either electronic or hardcopy) should be accessible when performing the work.
- b. Individuals performing work or the task lead running the operation should sign completed events immediately following completion of work unless this would have a negative impact on the task being performed (e.g., having to stop in the middle of a set of critical sets to sign off on work completed.) At a minimum, the individual should sign off on work before leaving the work area.
- c. For events requiring a QE sign-off, designated “witness” events require that a QE be present when the work is executed. “Verify” events indicate that a QE may check the work at any point after completion. If not specified, the sign-off default is always as a “verify” event. Write mandatory inspection points as separate events for QE signoff.
- d. Verification events shall be dated at the time the actual verification is complete and, therefore, may seem out of order when reviewing the document. Backdating should never be done.
- e. If electronic signatures are used and the employee performing the work does not have login access for the system, the task lead or a QE witnesses the events being performed and sign for the employee, noting the name of the person who performed the work.
- f. In cases where an individual has not signed off the performed events, the PDL has the authority to determine whether the work can proceed. (Exception: PDL cannot skip or sign for QEs or Safety personnel.) If a decision is made to proceed on work events, the PDL signs and dates the event. A note should be added to indicate the name of the person that actually performed the work. If the PDL does not agree to proceed, work stops until the worker can sign.
- g. Approval signatures or initials shall be legible and leave no question as to who signed off or approved an item or event.
- h. Any events added to the WOA shall be within the scope of the originally planned WOA. These are not considered corrections and should be initialed and dated by the person adding the events.
- i. Discuss and receive concurrence with any safety-related redlines inserted after release of the WOA. The PDL, CSO or QE, and safety representative shall agree to the change before proceeding.
- j. When transitioning work to the next person, team, or organization taking custody of the product, the original PDL ensures that all work described on the WOA being performed prior to the transfer is complete.
- k. Section 3.0 describes the process for documentation changes to the as-planned events.

2.5 Work Completion and WOA Closure

- a. Upon completion of the work, the PDL shall sign off on the WOA that all planned work, inspections, and tests have been satisfactorily completed, and that the documentation and records are complete and available. Where problems were identified in the execution of the WOA, open a Problem Report (PR) and enter a disposition per the requirements of GPR 5340.4, Problem Reporting and Problem Failure Reporting. Record the PR number at the event where the problem occurred.

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

- b. The PDL ensures that all required supporting documentation is attached. Supporting documentation may include, but is not limited to:
 - As-run procedures
 - Test reports
 - Additional supporting documentation
 - Drawings, including all drawing changes
 - Photos
 - PRs and Problem Failure Reports (PFRs) (PRs should be closed)
- c. The PDL or designee delivers the package to the QE for review.
- d. The QE reviews the package. If there are no issues, the QE shall submit the completed WOA package to the CMO to continue the closure review process. If there are issues to resolve, the package shall be returned to the PDL for corrective action. Once all issues have been resolved, the PDL shall return the WOA package to the QE for final review, approval, and submittal to the CMO.
- e. After ensuring that the WOA is complete and that all the required approvals have been obtained, the CMO closes the WOA. The WOA and all supporting documentation is retained in accordance with GSFC and project record retention requirements (Section P.8).

3.0 WOA Revision and Change Management

- a. Changes to pre-planned and pre-approved work events shall be recorded on the WOA by the person finding the issue or by the PDL. Provide an explanation for the change in the WOA if it is not self-evident. All changes to pre-planned or pre-approved work require the date and signature or initials of the person making the change as a minimum depending on the Project WOA Procedure and level of change being made. Notes may be added to the document without approval or initial and dates. Events requiring QE or Safety may only be changed by QE/Safety and the PDL.
- b. Approval of changes may be made verbally if the date and name of the person providing the verbal approval are recorded.
- c. Problems or product anomalies, as described in the project problem reporting procedures are documented per GPR 5340.4, Problem Reporting and Problem Failure Reporting.
- d. Where changes to the product require revision of a drawing, procedure or other controlled items, the appropriate document change shall be initiated prior to WOA closure.
- e. Each project determines whether or not deviation sheets are required, based upon their cost and benefit to the project and product.

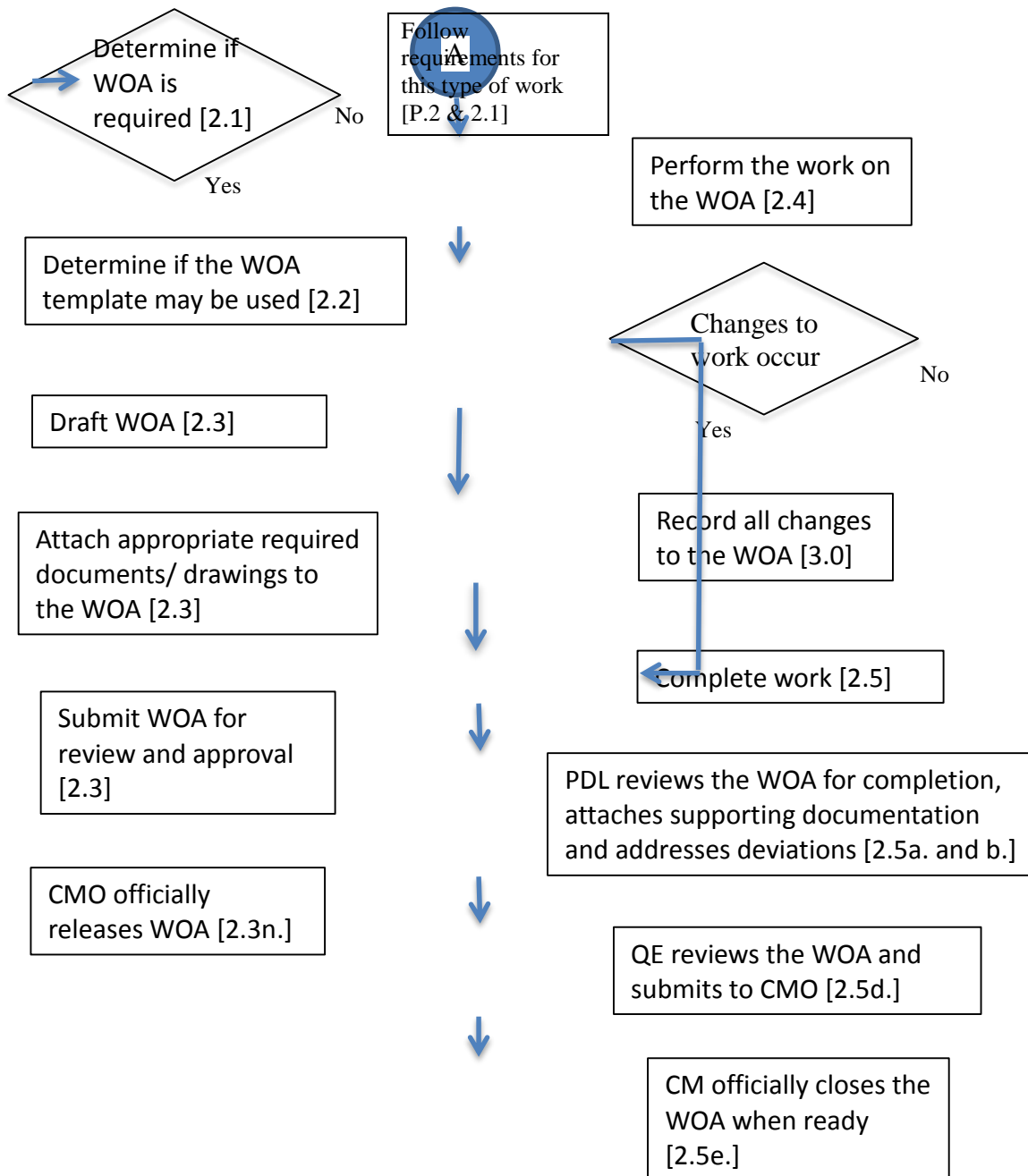


Figure 1. WOA Process Flow

Appendix A – Definitions

- A.1 **Administrative correction** – A change that does not change the technical intent of the work, such as correcting event numbering.
- A.2 **Continuation sheet** – The part of the WOA form used to document additional work to be performed within the scope of the original WOA.
- A.3 **Customer-supplied Product** – Any product, including materials, parts, fixtures, items or assemblies, provided by an external GSFC customer for incorporation into GSFC product or for activities related to development of GSFC product.
- A.4 **Deviation sheet** – A separate log of all changes made to the documentation as it is being run that becomes part of the WOA package.
- A.5 **Document change** – As-run change (including correction of errors/typos) to a WOA, procedure, or drawing identifying a deviation from the planned, approved work. Document changes are sometimes referred to as redlines, blacklines, or deviations; such terms are defined in project procedures.
- A.6 **Engineering test unit (ETU)** – An object built to simulate flight hardware with the intention of subjecting it to functional and/or environmental testing.
- A.7 **Final product delivery** – The point in time when all planned product processing events to be documented by the WOA system have been completed. This might be final shipment/delivery, the launch event, or in-flight or on-orbit checkout.
- A.8 **In-Process inspection and testing** – Verification by inspection and/or testing of quality characteristics, defined by project quality requirements or documented procedures, during the processing of a product.
- A.9 **Mandatory Inspection Point** – An inspection point that is identified and imposed by the government and that requires an action by the government to assure contractor compliance to requirements or to verify that specific actions have occurred.
- A.10 **Processing of a product** – Activities related to the manufacture, assembly, integration, testing, and handling of the product.
- A.11 **Product design lead (PDL)** – The manager or leader with overall responsibility for managing the design activity, managing the technical and organizational interfaces identified during design planning, and where required, forming and leading the product design team.

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

- A.12 **Project manager (PM)** – The manager or leader with overall responsibility for a product.
- A.13 **QE verify** – Work that can be verified as being done according to the WOA at any time the work has been performed, but before the WOA has been closed. These will always be dated as of the date the actual verification is done by the QE.
- A.14 **QE witness** – Work that requires the QE to be present when the actual work is taking place to ensure it is done according to the WOA.
- A.15 **Work Order Authorization (WOA)** – WOA Template or equivalent, which initially documents event-by-event work plans, and then documents that work events have been completed, approvals and inspections have been obtained and the product is either ready for release or for the next events in its planned processing sequence.

DIRECTIVE NO.	<u>GPR 5330.1I</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>
EXPIRATION DATE:	<u>December 15, 2020</u>

Appendix B – Acronyms

CMO	Configuration Management Officer
CSO	Chief Safety and Mission Assurance Officer
ESD	Electrostatic Discharge
ETU	Engineering Test Unit
GID	Goddard Interim Directive
GPR	Goddard Procedural Requirement
GSE	Ground Support Equipment
GSFC	Goddard Space Flight Center
NRRS	NASA Records Retention Schedules
PDL	Product Design Lead
PM	Project Manager
PFR	Problem Failure Report
PR	Problem Report
QE	Quality Engineer
WFF	Wallops Flight Facility
WOA	Work Order Authorization

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

DIRECTIVE NO. GPR 5330.1I
EFFECTIVE DATE: December 15, 2015
EXPIRATION DATE: December 15, 2020

Page 14 of 21

Appendix C - WOA Template

Page ____ of ____



Work Order Authorization (WOA)

1. WOA Title		2. WOA Number		4. Open Date	
		3. Originator/Code/Phone		5. Close Date	
6. Project Organization		7. Item Name/Description			
8. Item Type					
Customer Supplied? Yes <input type="checkbox"/> No <input type="checkbox"/>		Category:		<input type="checkbox"/> Mechanical Part <input type="checkbox"/> Software (When applicable) <input type="checkbox"/> Flight <input type="checkbox"/> GSE <input type="checkbox"/> Engineering Test Unit	
<input type="checkbox"/> Photo		<input type="checkbox"/> Sub-Assembly/Assembly <input type="checkbox"/> Sub-system/System <input type="checkbox"/> Component <input type="checkbox"/> Non-Flight			
8.a. Item Configuration Number/Revision				8.b. Serial Number (when applicable)	
9. Description of Work/Supplier Information					
10. Required Documentation/Revision Level					
11. Safety/Special Requirements or Support Hazardous Operations Yes <input type="checkbox"/> No <input type="checkbox"/> Special Requirements/Support Yes <input type="checkbox"/> No <input type="checkbox"/> Non-Standard Operating Procedure Yes <input type="checkbox"/> No <input type="checkbox"/>				If "Yes" box(es) checked, provide details.	
12. WOA Approvals					
12a. WOA Plan Approval – Signature/Code/Date				12b. WOA Close out Approval - Signature/Code/Date	
13. Event Number	14. Responsible Code	15. Event Description		Sign or initial and Date	
				16. Performed by	17. Inspected by

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

DIRECTIVE NO. GPR 5330.1I
EFFECTIVE DATE: December 15, 2015
EXPIRATION DATE: December 15, 2020

Page 15 of 21

Continuation Sheet for WOA Number _____

Page ____ of ____

13. Event Number	14. Responsible Code	15. Event Description	16. Performed by	17. Inspected by	18. PR/PFR Number	19. Product Disposition Completion Date

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

DIRECTIVE NO.	<u>GPR 5330.1I</u>
EFFECTIVE DATE:	<u>December 15, 2015</u>
EXPIRATION DATE:	<u>December 15, 2020</u>

Instructions for WOA and Continuation Sheet

Use of the template is mandated by GPR. Projects may use an equivalent template or an electronic form. Blocks/sections on this template may be altered, if necessary, provided all required information is on the project form/template. The project WOA Procedure provides final guidance.

1. WOA Title- Brief reference description of the work to be performed. It may be helpful to add information as to the phase of this work, such as, fabrication, integrations, test, etc.
2. WOA Number – Unique number assigned for reference purposes (e.g., numbering scheme based on project acronym, issue date, and sequentially generated number).
3. Originator/Code/Phone – Print name of the person initiating the WOA, organizational code and telephone number.
4. Open Date – Date the WOA is initiated by the originator
5. Close date – Date the WOA is competed, verified, and PR closed, as applicable.
6. Project/Organization – Associated Project or organization name, if applicable.
7. Item Name/Description – Name of the product associated with the WOA.
8. Item Type – Check appropriate “Yes” or “No” blocks and category blocks. Blocks used on this template are examples. Projects may elect to add or delete categories. Indicate next higher assemble number, if appropriate.
 - 8.a. Item Configuration Number/Revision – Configuration identification (e.g., part number, assembly number) designated in drawing/design documentation and configuration revision.
 - 8.b. Serial Number – Serialized identification, when a product requirement.
9. Description of Work/Supplier Information – A summary describing the task to be performed, if block 1 reference title is insufficient. All detailed event-by-event descriptions shall be listed under “Event Description.”
10. Required Documentation/Revision Level – Any document (with revision identification) that will be used in the performance of this WOA (e.g., drawing, procedure, instruction).
11. Safety/Special Requirements or Support – Check appropriate “Yes” or “No” boxes. If “yes” is checked for one or more boxes, provide details. Hazardous Operations should be checked if the planned operations require special engineering controls (mitigating equipment, interlocks, guarding, etc.), special administrative controls (personnel safety training, non-standard operating procedures, excessive or unusual hours of operations, etc.), and/or use of personal protective protections (respirator, hardhat, hearing protection, eye protection, etc.). Special Requirements/Support should be checked if the planned operations any special notes, work environment considerations, necessary supporting equipment or personnel. Non-Standard Operating Procedures should be checked when standard operating procedures are inadequate to mitigate hazards (electrical, mechanical, chemical, radiation, etc.) associated with the planned operation.
12. WOA Approvals
 - 12.a. WOA Plan Approval- Signature (First Initial and Last name), code, and date.
 - 12.b. WOA Close out Approval – Signature (First Initial and Last name), code, and date
13. Event Number – Sequential numbers within each WOA.

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT

<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

14. Responsible Code – Organization responsible for performing the event.
15. Event Description – Detailed action to be performed and/or reference to the procedure/instruction.
Note: A series of events may be treated as a unit as described in this document, Section 2.3d.
Note: Requiring events to be worked in order needs to be stated in the first event. Otherwise, it is assumed the events may be worked out of order.
16. Performed by - Event performer initials or signs when the event is complete. If the event is an inspection, write “N/A” or “/” before proceeding to the next event.
Note: Events should be signed off as soon after completion as possible. At a minimum, sign the event before leaving the work area. (Section 2.4 provides details on event sign-off.)
17. Inspected by – QE signs event was satisfactorily completed.
Note: QE witness events require the QE to be present and work can’t proceed until accomplished.
18. PR/PFR Number – The number of the Problem Report/Problem Failure Report (See GPR 5340.2) generated as a result of events producing results, which do not meet acceptance criteria.
19. Product Disposition Completion Date – Date when nonconforming product identified in the PR/PFR (see block 18) has been dispositioned (See GPR 5340.2), including completion of any rework, repair, or reclassification. Attach a copy (and/or provide electronic accessibility) of the PR/PFR indicating disposition approval. Include in data package all objective evidence that disposition has been carried out (e.g., rework/repair WOA).

Continuation Sheets

1. Indicate WOA Number, sequential page number
2. Upon completion of the WOA, indicate final page number on all pages
3. Blocks 13-19 instructions are the same as above.

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	08/12/98	Initial Release
A	10/6/98	Header and footer format changes. Added Note in P2 regarding science research products. Expanded 2.2.1 required activities to include calibration and handling certification verification. Identified quality records maintenance responsibility.
B	04/21/99	Combined 5330.1A and 5330.3A. Moved Records from paragraph 3. to Preface paragraph P6. to comply with GPG 1410.1.
C	02/22/00	<p>Deleted GSFC Form 4-30 as an attachment.</p> <p>In P4, corrected ISC Product Development Handbook document number.</p> <p>In P6, changed quality record custodian to Product Manager and delineated the differences between a WOA as a planning document, a controlled document, and a quality record.</p> <p>Under 1, added the definitions of Product Manager and Final Product Delivery.</p> <p>Put definitions in alphabetical order.</p> <p>Added in 2.1.1 several ways to access WOA Form 4-30.</p> <p>Under 2.1.1 paragraph b, allowed slightly modified versions of GSFC Form 4-30 to better meet a particular project's needs.</p> <p>Expanded Note at end of 2.1.1 to explain the limited usage of the FEMS generated GSFC Certification Log.</p> <p>Under 2.4, identified several ways product processing details can be recorded via the WOA. Also, added requirement that all "Performed by" or "Inspected by" blocks have either initials/signatures, "N/A" or "/" written in them before proceeding to the next processing event.</p> <p>Adjusted paragraph references in Flowchart.</p>

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

CHANGE HISTORY LOG *Continued*

Revision	Effective Date	Description of Changes
D	07/31/01	<p>Added k. and l. references to P4.</p> <p>Added statements/words to P6, Section 2.4, and Section 2.5 to clarify that only the pre-planned and pre-approved processing events require change authority. Intermediate processing steps and information within the scope of the approved WOA do not require change authority.</p> <p>2.1.1 Added reference to training module and included direct link to website. Clarified the use of current revision of Form 4-30 for new and existing projects.</p> <p>2.2.1 Added sentence that states that the WOA shall include “work environment considerations.”</p> <p>Added “(or his/her designee)” after the initials “PDL” in Sections 2.1.3 and 2.2.1.</p>
E	02/15/05	<p>Updated to GPR template.</p> <p>P4. Changed several GPR titles and added GPR 3410.2.</p> <p>Changed multiple “must,” “will,” and “should” statements to “shall” statements throughout.</p> <p>Changed most references from NCR to PR/PFR throughout document and flowchart.</p> <p>Added Customer-Supplied Product definition to P10.</p> <p>Under 1.1.1, added “incoming receipt or” to second line.</p> <p>Under 1.1.1 c., removed exemption for MAP Project to use other than WOA Form 4-30.</p> <p>Added 1.2.1 to identify Customer-Supplied Product on WOA.</p>

CHANGE HISTORY LOG *Continued*

F	09/24/07	<p>P1. Added “and mandates”</p> <p>References: Replaced GPR 1440.7 with GPR 1440.8 and updated title to GPR 5340.2.</p> <p>Section 1.1.1 C. Note: Rewrite of GSFC Certification Log allowance.</p> <p>Section 1.2.1 Added AS9100 input on environmental concerns for conforming of product. Added IMTE documentation requirement.</p> <p>Updated Flowchart 1.3 to reflect usage of “in-date” IMTE and documentation required.</p>
G	05/07/2012	<p>Administrative Change:</p> <p>Under 1.1.1 c., Replaced RADIUS with Job Boss and changed conformance log to Traveler</p>
	09/13/2012	Administratively extended for a period of 1 year.
	07/01/2013	Administratively extended for a period of 1 year.
H	05/20/2014	<p>Administrative Change.</p> <ul style="list-style-type: none"> • Banner included referencing GID 5330.1, WOA Process to implement how WOA’s are used and processed. • Section P.5 updated from GPR 5003.1E, Product Processing, Inspection, and Test to “None.” <p>Administratively extended for a period of one year.</p>

DIRECTIVE NO. GPR 5330.1I
EFFECTIVE DATE: December 15, 2015
EXPIRATION DATE: December 15, 2020

Page 21 of 21

I	12/15/2015	<p>Converted GID 5330.1 to GPR.</p> <p>Changed the WOA Form 4-30 to a template throughout and added attachment to this document showing the template.</p> <p>P.2 Rewrite applicability statement to indicate those managed by codes 400 and 800, added words for software use of WOA, and clarified requirement for Class D missions</p> <p>P.4 added 400-PG-5330.1.1 and to 1.1.1h.</p> <p>P.7 Added information on supervision responsibilities, removed the requirement to train and certify personnel.</p> <p>P.8 Removed training records</p> <p>P.9. Changed to indicate audits will do verification</p> <p>Section 1.1 throughout reduced the number of requirements statements</p> <p>2.2.2 Clarified what WOA can be released with only PDL signature</p> <p>2.3 e add requirements for QE and Safety approval</p> <p>2.3.n. specified system engineer action</p> <p>2.4 c. added mandatory inspection point requirement</p> <p>2.4 d. Add mandatory inspection point requirement</p> <p>2.4 j. Added requirement for discussion of safety red-lines</p> <p>3.0 a. Added requirement for QE/Safety changes</p>
---	------------	---

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.